

### Abstract of the Invention

A method and apparatus for producing high-frequency oscillations is disclosed. A new resonator architecture minimizes via losses and supports a compact layout of active  
5 circuitry. The resonator architecture incorporates dual resonant transmission lines to reduce resonator loss and facilitate compact layout. The oscillations of two oscillators are cross-coupled in a way that compensates for the delay in the active devices of the oscillator, thus permitting accurate alignment of the active circuitry response with the oscillation waveform. The cross-coupling of the two oscillators improves phase noise  
10 performance and eliminates spurious oscillations. An active circuit architecture provides very narrow pulses for the operation of the oscillator. This architecture provides for accurate cross-coupling and pulsed-mode operation to improve manufacturing stability and phase noise performance.